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IS 11835 (Part 2) : 2004
ISO 5414-2 : 2002
(Superseding IS 11440 : 1985)

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भाग 2 चक के संयोजी आयाम और अभिनाम

(पहला पुनरीक्षण)

Indian Standard

TOOL CHUCKS (END MILL HOLDERS) WITH CLAMP SCREWS FOR FLATTED CYLINDRICAL SHANK TOOLS

PART 2 CONNECTING DIMENSIONS OF CHUCKS AND DESIGNATION

(First Revision)

ICS 25.100.20

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BUREAU OF INDIAN STANDARDS
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NATIONAL FOREWORD

This Indian Standard (Part 2) (First Revision) which is identical with ISO 5414-2 : 2002 'Tool chucks (end mill holders) with clamp screws for flatted cylindrical shank tools — Part 2 : Connecting dimensions of chucks and designation' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Milling Cutters, Saws, Gear Cutting Tools and Broaches Sectional Committee and approval of the Medical Instruments, General and Production Engineering Division Council.

This standard was first published as IS 11835 : 1986 based on ISO 5414-1 : 1985 and IS 11440 : 1985 based on ISO 5414-2 : 1982. After the revision of both ISO Standards, the committee decided to revise the corresponding Indian Standards also covering both the parts under one standard. Accordingly after the publication of these standards, IS 11440 : 1985 will be withdrawn. Now this standard has been published in following two parts :

IS 11835 (Part 1) : 2004 Tool chucks (end mill holders) with clamp screws for flatted cylindrical shank tools: Part 1 Dimensions of the driving system of tool shanks

IS 11835 (Part 2) : 2004 Tool chucks (end mill holders) with clamp screws for flatted cylindrical shank tools: Part 2 Connecting dimensions of chucks and designation

The text of this ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. In this adopted standard certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker in the International Standard while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

CROSS REFERENCES

In this adopted standard reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 296 Machine tools — Self holding tapers for tool shanks	IS 1715 : 2002 Dimensions for self holding taper (*third revision*)	Not equivalent
ISO 297 7/24 Tapers for tool shanks for manual changing	IS 2340 : 1972 Dimensions for self-release 7/24 tapers for milling arbors and tool shanks (*first revision*)	Technically equivalent
ISO 3338-2 Cylindrical shanks for milling cutters — Part 2 : Dimensional characteristics of flatted cylindrical shanks	IS 8692 (Part 2) : 2004 Cylindrical shanks for milling cutters: Part 2 Dimensional characteristics of flatted cylindrical shanks	Not equivalent
ISO 7388-1 Tool shanks with 7/24 taper for automatic tool changers — Part 1 : Shanks Nos. 40, 45 and 50 — Dimensions	IS 11173 (Part 1) : 1985 Recommendations for tool shanks 7/24 taper for numerically controlled machine tools with automatic tool changers (Tool rotating type): Part 1 Tool shanks	Technically equivalent

(*Continued on third cover*)

Indian Standard

TOOL CHUCKS (END MILL HOLDERS) WITH CLAMP SCREWS FOR FLATTED CYLINDRICAL SHANK TOOLS

PART 2 CONNECTING DIMENSIONS OF CHUCKS AND DESIGNATION

(First Revision)

1 Scope

This part of ISO 5414 specifies the dimensions of tool chucks (end mill holders) with clamp screws for tools with flatted cylindrical shanks in accordance with ISO 3338-2. It also specifies the designations of these chucks.

Two types of connection are defined:

- chucks with 7/24 taper shanks in accordance with ISO 297 for manual changers and with ISO 7388-1 for automatic changers, for tool shanks with either single flat or a double flat for manual and automatic changers;

NOTE 1 This part of ISO 5414 specifies the dimensions of tool chucks with 7/24 taper shanks No. 30 for automatic changers although these are not standardized.

- chucks with Morse taper shanks in accordance with ISO 296 and ISO 5413 for tool shanks with a single flat only.

NOTE 2 The dimensions of the driving system of the tool shanks are dealt with in ISO 5414-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 5414. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 5414 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 296, *Machine tools — Self-holding tapers for tool shanks*

ISO 297, *7/24 tapers for tool shanks for manual changing*

ISO 3338-2, *Cylindrical shanks for milling cutters — Part 2: Dimensional characteristics of flatted cylindrical shanks*

ISO 5413, *Machine tools — Positive drive of Morse tapers*

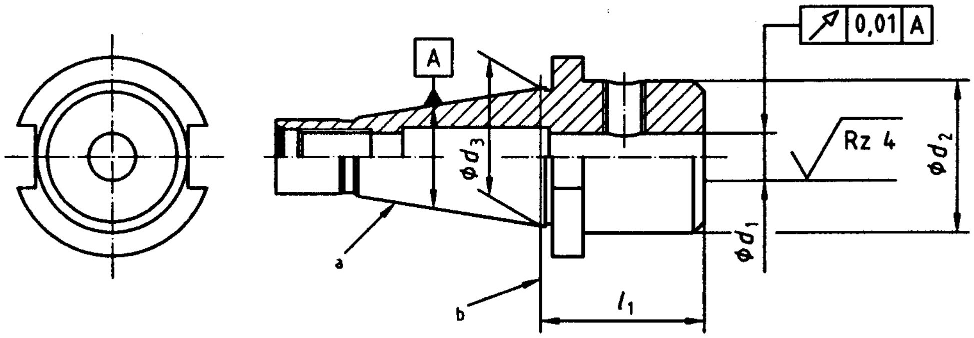
ISO 7388-1, *Tool shanks with 7/24 taper for automatic tool changers — Part 1: Shanks Nos. 40, 45 and 50 — Dimensions*

3 Chucks with 7/24 taper shanks for manual changers

3.1 Chucks for tool shanks with single flat

See Figure 1 and Table 1.

Dimensions in millimetres,
surface roughness value in micrometres



[a] 7/24 taper shank in accordance with ISO 297

[b] Gauge plane

Figure 1

Table 1

Dimensions in millimetres

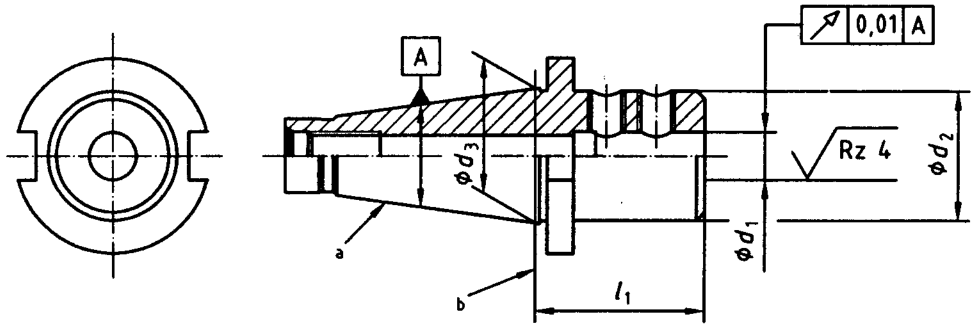
7/24 taper shank No.	d_3	d_1 H5	d_2 $^{0}_{-1}$	l_1[a]
30	31,75	6	25	40
		8	28	
		10	35	
		12	42	
		14	44	50
		16	48	
		18	50	63
		20	52	
40	44,45	6	25	50
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	63
		18	50	
		20	52	
45	57,15	6	25	50
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	63
		18	50	
		20	52	
50	69,85	6	25	
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	
		18	50	
		20	52	

[a] For some special devices for tool holders, others lengths, l_1, can be determined.

3.2 Chucks for tool shanks with double flat

See Figure 2 and Table 2.

Dimensions in millimetres,
surface roughness value in micrometres



[a] 7/24 taper shank in accordance with ISO 297

[b] Gauge plane

Figure 2

Table 2

Dimensions in millimetres

7/24 taper shank No.	d_3	d_1 H5	d_2		l_1[a]
40	44,45	25	65	$^{0}_{-1}$	90
		32	72		100
45	57,15	25	65	$^{0}_{-1}$	80
		32	72		80
		40	80	max.	90
		50	90		115
50	69,85	25	65	$^{0}_{-1}$	80
		32	72		80
		40	80	max.	90
		50	90		115
		63	130		

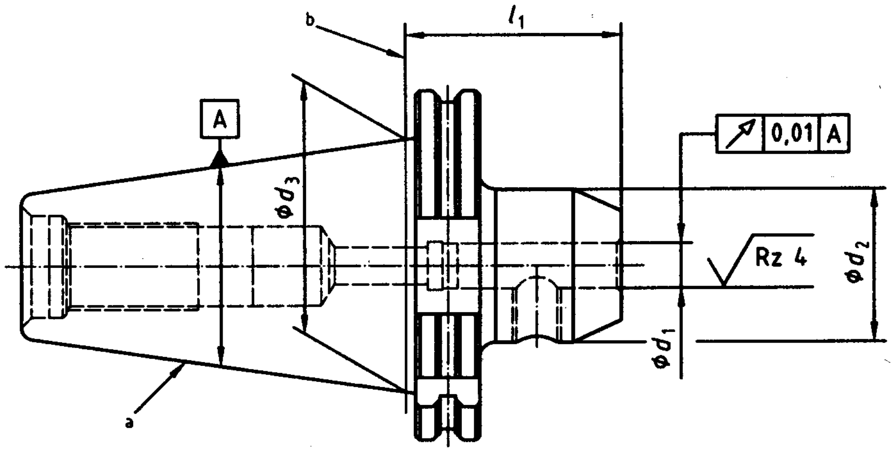
[a] For some special devices for tool holders, other lengths, l_1, can be determined.

4 Chucks with 7/24 taper shanks for automatic changers

4.1 Chucks for tool shanks with single flat

See Figure 3 and Table 3.

Dimensions in millimetres,
surface roughness value in micrometres



a 7/24 taper shank in accordance with ISO 7388-1, except for taper shanks No. 30

b Gauge plane

Figure 3

Table 3

Dimensions in millimetres

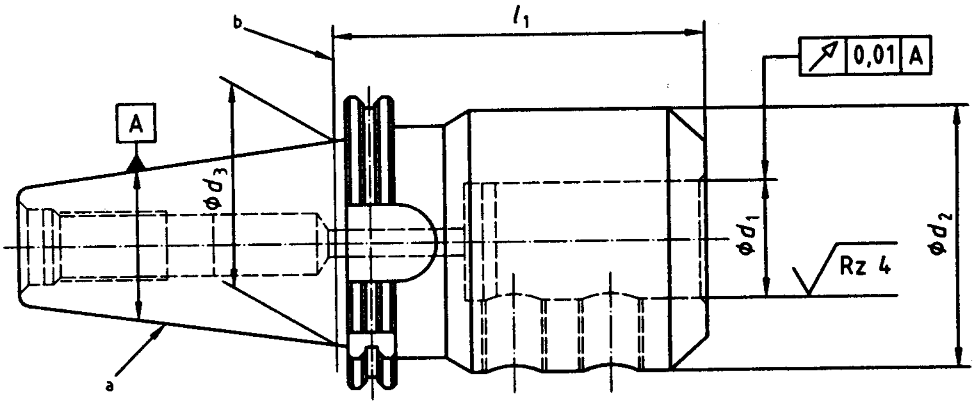
7/24 taper No.	d_3	d_1 H 5	d_2 $^{0}_{-1}$	l_1[a]
30	31,75	6	25	50
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	63
40	44,45	6	25	50
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	63
		18	50	
		20	52	
45	57,15	6	25	50
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	63
		18	50	
		20	52	
50	69,85	6	25	
		8	28	
		10	35	
		12	42	
		14	44	
		16	48	
		18	50	
		20	52	

[a] For some special devices for tool holders, other lengths, l_1, can be determined.

4.2 Chucks for tool shanks with double flat

See Figure 4 and Table 4.

Dimensions in millimetres,
surface roughness value in micrometres



[a] 7/24 taper shank in accordance with ISO 7388-1

[b] Gauge plane

Figure 4

Table 4

Dimensions en millimetres

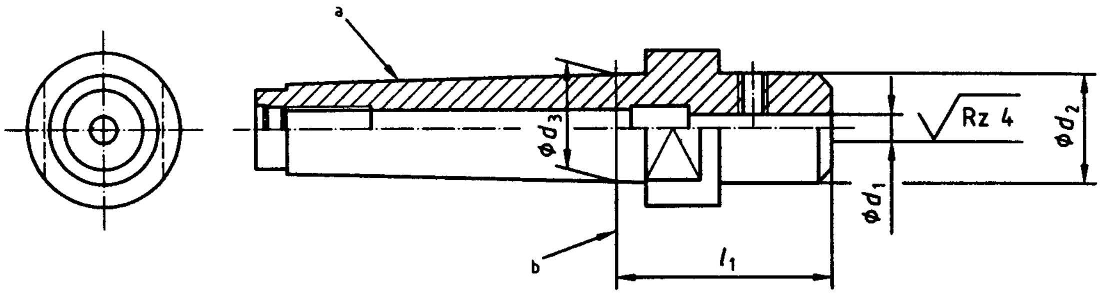
7/24 taper No.	d_3	d_1 H5	d_2 $^{0}_{-1}$	l_1[a]
40	44,45	25	65	100
		32	72	
45	57,15	25	65	80
		32	72	100
50	69,85	25	65	80
		32	72	100

[a] For some special devices for tool holders, other lengths, l_1, can be determined.

5 Chucks with Morse taper shanks for tool shanks with single flat

See Figure 5 and Table 5.

Surface roughness value in micrometres



[a] Morse taper shanks in accordance with ISO 296 and ISO 5413

[b] Gauge plane

NOTE With the exception of chucks with Morse taper shank No. 2, these chucks have Morse taper shanks with positive drive.

Figure 5

Table 5

Dimensions in millimetres

Morse taper No.	d_3	d_1 H5	d_2 $^{0}_{-1}$	l_1[a]
2	17,780	10	35	50
3	23,825	10	35	45
		12	42	50
		16	48	71
4	31,267	10	35	50
		12	42	56
		16	48	56
		20	52	71
5	44,399	10	35	56
		12	42	63
		16	48	63
		20	52	63

[a] For some special devices for tool holders, other lengths, l_1, can be determined.

6 Designation

A tool chuck (end mill holder) for either manual or automatic tool changers in accordance with this International Standard shall be designated by:

a) the designation "Tool chuck";

b) reference to this part of ISO 5414, i.e. ISO 5414-2;

c) the letter A in the case of manual tool changers (in accordance with ISO 297) followed by the figure 1 or 2 depending on if the chuck is with single flat or with double flat;

d) the letter B in the case of automatic tool changers (in accordance with ISO 7388-1) followed by the figure 1 or 2 depending on if the chuck is with single flat or with double flat;

e) the letter M in the case of a chuck with Morse taper shank;

f) the taper size number;

g) the clamping diameter d_1;

h) the size of the clamp screw.

EXAMPLE A tool chuck for manual tool changers, form A (in accordance with ISO 297) with single flat, with taper size 45 and a clamping diameter d_1 = 10 mm and a clamp screw of M10 is designated as follows:

Tool chuck ISO 5414-2 - A1 - 45 × 10 - M10

EXAMPLE A tool chuck for automatic tool changers, form B (in accordance with ISO 7388-1) with double flat, with taper size 45 and a clamping diameter d_1 = 25 mm and a clamp screw of M18 × 2 is designated as follows:

Tool chuck ISO 5414-2 - B2 - 45 × 25 - M18 × 2

EXAMPLE A tool chuck with Morse taper shank with taper size 3 and a clamping diameter d_1 = 16 mm and a clamp screw of M14 is designated as follows:

Tool chuck ISO 5414-2 - M - 3 × 16 - M14

Bibliography

[1] ISO 5414-1, *Tool chucks (end mill holders) with clamp screws for flatted cylindrical shank tools — Part 1: Dimensions of the driving system of the tool shanks*

(*Continued from second cover*)

At present there is no corresponding Indian Standard to ISO 5413 'Machine tools — Positive drive of Morse tapers'. The concerned Sectional Committee reviewed the provisions of this ISO Standard referred in this adopted standard and decided that they are acceptable for use in conjunction with this standard:

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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